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10/686,389	10/14/2003	Young Han Nam	KIM-10113	6308
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EXAMINER BORSETTL, GREG				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/686,389

**Applicant(s)**

NAM ET AL.

**Examiner**

GREG A. BORSETTI

**Art Unit**

2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

#### ***Response to Amendment***

1. Claims 2-9 are pending.
2. Claims 2-9 have been amended.
3. The rejections under 35 USC 2nd paragraph have been withdrawn.
4. The 35 USC 101 rejections have been withdrawn.

#### ***Response to Arguments***

5. Applicant argues "Applicant respectfully submits that DeJaco does not teach or suggest a method of preprocessing audio data that would be classified and encoded as noise data by a predetermined codec optimized for voice (e.g., voice codec) to cause the predetermined codec to classify the preprocessed audio data as valid voice data instead of noise data. Rather DeJaco only appears to disclose modifying the predetermined codec itself by improving the encoding rate decision method/apparatus, which is a part of the predetermined codec. By contrast, as claimed in the present invention, the rate decision result of the predetermined codec is affected by preprocessing audio data to be fed into the codec without any modification to the rate decision algorithm in the predetermined codec itself." (Remarks, Page 12, ¶ 2)

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir.

1986). DeJaco and Malvar were used in combination to teach that when the pre-emphasis of Malvar is applied to DeJaco, an encoding rate is selected based on at least the pre-emphasized (amplitude adjusted) audio signal. The argument is not persuasive.

6. Applicant further argues "Malvar appears to simply describe automatic gain control without any detailed function, and does not teach or suggest analyzing audio data so as to select the frames that are classified as noise data if provided to the predetermined codec." (Remarks, Page 12, ¶ 3)

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). DeJaco teaches that intervals of audio data are determined to be encoded at a low bit rate, therefore the combination of Malvar and DeJaco teaches the claim language. The argument is not persuasive.

7. Applicant further argues "Applicant respectfully submits that even assuming *arguendo*, the combination of DeJaco and Malvar merely creates a modified predetermined codec with automatic gain control, which is distinguishable from the claimed invention which does not require any modification to the predetermined codec itself, as previously discussed." (Remarks, Page 12, ¶ 4) The Examiner disagrees. Malvar, column 2, lines 41-51 clearly states that the automatic gain control is performed as a preprocessing step. Therefore it does not modify the coder of DeJaco. The argument is not persuasive.

8. Applicant further argues "Accordingly, Malvar, alone or in combination with DeJaco, does not either teach or suggest a method of preprocessing audio data that would be classified and encoded as noise data by a predetermined codec optimized for voice (e.g, voice codec) to cause the predetermined codec to classify the preprocessed audio data as valid voice data instead of noise data." (Remarks, Page 13, ¶ 1)

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., classify the preprocessed audio data as valid voice data instead of noise data) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

9. Applicant further argues "Furthermore, it is difficult, if not impossible, to imagine how one skilled in the art in possession of these references could conceive of the present invention absent hindsight reconstruction which was prohibited by the Supreme Court in *Diamond Rubber Co. v. Consolidated Rubber Tire Co.*, 220 U.S. 428 435-436 (1911). To find obviousness, "there must be some reason for the combination other than the hindsight gleaned from the invention itself." *Interconnect Planning Corp. v. Feil*, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985). Stated in another way, "[I]t is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." *In re Fritch* 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992)." (Remarks, Page 13-14)

In response to applicant's argument that the examiner's conclusion of

obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The argument is not persuasive.

10. Applicant further argues "Applicant respectfully submits that the combination of the references for the purposes of the present rejection is improper because of the failure of either patent to suggest the combination. It is a requirement that in making a combination of patents in a rejection, those patents must suggest the desirability of the combination of teachings. This requirement was expressed by the Court of Customs and Patent Appeals in *In re Imperato*, 179 U.S.P.Q. 730 where it stated: "...the mere fact that those disclosures can be combined does not make the combination obvious unless the art also contains something to suggest the desirability of the combination."" (Remarks, Page 14, ¶ 3)

The Examiner disagrees. The Examiner provided that the combination would have been obvious to combine DeJaco and Malvar because the automatic gain control of Malvar was known, and it would improve the system in a similar way gleaned from DeJaco, by enabling the system to more easily distinguish the unvoiced speech signal from noise and then correctly encode the frame at a higher bit rate thereby reducing encoding errors and increasing resolution during speech reconstruction (KSR

exemplary rationale C, MPEP 2143). The rationales from KSR International Co. v. Teleflex Inc., 550 U.S. 82 USPQ2d 1385, 1395-97 (2007) had been used to support a conclusion of obviousness. As stated in MPEP 2143, they are consistent with the proper "functional approach" to the determination of obviousness as laid down in Graham. The argument is not persuasive.

### ***Request for Reference***

11. Under 37 CFR 1.56, applicant is required to disclose all information material to the examination of the case. The Examiner has become aware of a reference by the same authors of the instant application and requests the reference Nam et al. (NPL document "A Preprocessing Approach to Improving the Quality of the Music Decoded by an EVRC Codec")

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2, 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeJaco (5,742,734) in view of Malvar (6,029,126).

As per claim 2, DeJaco teaches the method comprising:

analyzing, in the computing system, audio data so as to select the at least some frames that, when provided to the predetermined codec, are classified as noise data and encoded at the lowest encoding rate by the predetermined codec;

(DeJaco, column 1, lines 12-22, ...*The rate determination algorithm assigns a higher bit rate encoding scheme to segments of the audio signal in which speech is present and a lower rate encoding scheme for silent segments...* DeJaco more specifically teaches the rate selection on column 3 lines 56-67 to column 4, lines 1-15 based on the energy in each subband. Column 5, lines 13-64 further teaches that the thresholds are developed based on the estimated signal to noise ratio, which detects voice (column 2, lines 24-33).)

DeJaco fails to fully teach, but Malvar teaches:

adjusting, in the computing system, energy of the at least some frames of audio data selected in the analyzing so as to produce preprocessed frames of audio data that, when provided to the predetermined codec, are classified as valid voice data and encoded at the one of the plurality of encoding rates other than the lowest encoding rate thereof, (DeJaco provides classification of voice data through voice detection thresholds (column 2, lines 24-33). DeJaco does not explicitly state that the voice data is not encoded at the lowest rate, but as shown in Table 1 (column 5, lines 31-40) SNR values limit the rate thresholds. Therefore, a high SNR indicating a voice detection would not be encoded at the lowest rate. Malvar discloses that signal



enhancement functions are often used to enhance a signal prior to processing by the codec, automatic gain control being one of those functions (column 2 lines 41-51). The enhancement functions are used to transform the signal in order to increase encoding accuracy.

wherein preprocessing the audio data causes the predetermined codec to classify the preprocessed frames of audio data as valid voice data instead of noise data. (DeJaco teaches that previous speech coding systems do not correctly determine when low energy unvoiced speech is input (column 1 lines 40-52). The systems often mistake low energy unvoiced speech as noise and encode the signal at a lower bit rate, causing degradation in speech quality during speech reconstruction (column 1 lines 40-52). Malvar, column 2, lines 41-51 teaches automatic gain control, which is known in the art to improve gain on designated functions. It would have been obvious considering the application of Malvar to use automatic gain control on the audio data of DeJaco to more easily distinguish voice and noise.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the known enhancement function (Malvar) of adjusting the amplitude of the audio data in DeJaco, since it would improve the system in a similar way, enabling the system to distinguish the unvoiced speech signal from noise then correctly encode the frame at a higher bit rate, thus reducing encoding errors and increasing resolution during speech reconstruction.

As per claim 8, claim 2 is incorporated and DeJaco teaches:

wherein the predetermined codec is configured to classify frames of the audio data into the noise data or the valid voice data using a predetermined rate decision algorithm, and the analyzing includes classifying frames of audio data into at least one of the noise data and the valid voice data using the predetermined rate decision algorithm. (DeJaco, columns 3-4, equations 4-6 teaches the rate decision algorithms which relies on preprocessing steps. These algorithms classify the audio data into noise or voice for coding at a predetermined rate.)

As per claim 9, claim 2 is incorporated and DeJaco and Malvar fail to specifically teach, but suggest:

wherein the computing system for preprocessing audio data is a separate system from the predetermined codec. (DeJaco and Malvar perform classification and AGC prior to coding as preprocessing steps. Therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention that the preprocessing steps could have been performed independently of the variable rate coder such as, for example, a distributed coder.)

13. Claims 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeJaco (5,742,734) in view of Malvar (6,029,126) and further in view of Eryilmaz et al. (US Patent #5867574)

As per claim 3, claim 2 is incorporated and DeJaco and Malvar fail to fully teach, but Eryilmaz teaches:

further comprising the step of determining whether a frame in the audio data is a silence frame based on the energy of the frame, wherein when the frame is a silence frame, the energy thereof is not adjusted in the adjusting step.

(DeJaco, column 2 lines 15-18 and lines 39-42, the input signal is analyzed to determine the presence of speech or music. If the input signal is neither speech nor music, then it must be noise or silence with background noise. Further, Eryilmaz, claim 22, ...*said automatic gain control means communicating with said voice activity detector to insert gain only upon the detection of said voice activity...*)

It would have been obvious to someone of ordinary skill in the art at the time of the invention to only provide gain to known voiced frames to avoid boosting background noise into the signal. (column 9, lines 41-47)

14. Claims 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeJaco (5,742,734) in view of Malvar (6,029,126) and further in view of Bhaskar et al. (US Patent # 7013269)

As per claim 4, claim 2 is incorporated and DeJaco and Malvar fail to specifically teach, but Bhaskar suggests:

calculating signal levels of the selected frames of the audio data;

(Column 5, line 64 to column 6, line 14, ...*the signal via an automatic gain control (AGC) mechanism to improve VAD performance for low level signals...* There is a determination of signal level to determine low level signals. Fig. 2 teaches a frame structure.)

determining gain values based on the calculated signal levels produced by the calculating; and (Column 5, line 64 to column 6, line 14, ...*the signal via an automatic gain control (AGC) mechanism to improve VAD performance for low level signals...*)

generating preprocessed frames of audio data by multiplying the gain values to the selected frames of audio data. (Column 5, line 64 to column 6, line 14, the signals are scaled according to the automatic gain control where it would have been obvious to someone of ordinary skill in the art that the gain values would have been multiplied with the signal to scale the signal from unity.)

It would have been obvious to someone of ordinary skill in the art to combine Bhaskar with DeJaco and Malvar because Malvar teaches the use of AGC in preprocessing and DeJaco teaches the use of voice detection. Bhaskar further provides the added benefit of using the AGC to improve VAD detection for low level signals. Therefore it would have been obvious to combine Bhaskar with DeJaco and Malvar to improve the VAD detection of DeJaco for low level signals. (Column 5, line 64 to column 6, line 14)

15. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeJaco (5,742,734) in view of Malvar (6,029,126) and further in view of Bhaskar et al. (US Patent # 7013269) in view of Claesson et al. (US Pre-Grant Publication # 20030023429)

As per claim 5, claim 4 is incorporated and DeJaco and Malvar fail to specifically teach, but Bhaskar suggests:

wherein the frame includes a set of samples including a current sample, and a signal level for the current sample is determined based on the current sample and other samples adjacent to the current sample, (column 5, lines 34-47 describes VAD detection (which includes AGC) as being performed on frames of buffered samples. Therefore the scaling is performed per frame.)

It would have been obvious to someone of ordinary skill in the art to combine Bhaskar with DeJaco and Malvar because Malvar teaches the use of AGC in preprocessing and DeJaco teaches the use of voice detection. Bhaskar further provides the added benefit of using the AGC to improve VAD detection for low level signals. Therefore it would have been obvious to combine Bhaskar with DeJaco and Malvar to improve the VAD detection of DeJaco for low level signals. (Column 5, line 64 to column 6, line 14)

Bhaskar fails to teach, but Claesson teaches:

the gain value for the current sample in the frame is determined based on the signal level of the current sample. (Claesson, ¶ 0048, ... *The future sample is multiplied by the gain factor. If the resulting data has an amplitude greater than a threshold value (a user-fixed parameter) the gain factor is reduced to a value equal to the threshold value divided by the amplitude of the future sample...Finally, the sample in the buffer which has been delayed is multiplied by the gain factor described above in order to produce the output...*)

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Claesson with Bhaskar, DeJaco, and Malvar because (¶ 0007) undesirable artifacts are generated from low bit rate encoding schemes and Claesson provides automatic gain control which depend on certain parameters that can be selected depending on the application and desired effect. (¶ 0012) Therefore it would have been obvious to combine Claesson with Bhaskar, DeJaco, and Malvar to use automatic gain control tailored to the application.

As per claim 6, claim 5 is incorporated and DeJaco, Malvar, and Bhaskar fail to teach, but Claesson teaches:

wherein the signal level for the current sample is determined based on the current sample and a first set of samples within an attack time ahead of the current sample, and a second set of samples within a release time behind the current sample. (Claesson, ¶ 0072, ...*the AGC blocks of the present invention examine the recent history and/or immediate future of the signal and use this information to adjust a gain*

*factor such that the signal is kept within a range of peak excursion...)*

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Claesson with Bhaskar, DeJaco, and Malvar because (§ 0007) undesirable artifacts are generated from low bit rate encoding schemes and Claesson provides automatic gain control which depend on certain parameters that can be selected depending on the application and desired effect. (§ 0012) Therefore it would have been obvious to combine Claesson with Bhaskar, DeJaco, and Malvar to use automatic gain control tailored to the application.

As per claim 7, claim 6 is incorporated and DeJaco, Malvar, and Bhaskar fail to teach, but Claesson teaches:

wherein the attack time and the release time can be changed based on the characteristic of the audio data. (Claesson, § 0012, *...the present invention provides methods and apparatus for effecting automatic gain control for a sampled signal. Specific embodiments are described as algorithms that depends on certain parameters that can be selected depending on the application and the desired effect...*)

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Claesson with Bhaskar, DeJaco, and Malvar because (§ 0007) undesirable artifacts are generated from low bit rate encoding schemes and Claesson provides automatic gain control which depend on certain parameters that can be selected depending on the application and desired effect. (§ 0012) Therefore it would

have been obvious to combine Claesson with Bhaskar, DeJaco, and Malvar to use automatic gain control tailored to the application.

### ***Conclusion***

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to PTO-892, Notice of References Cited for a listing of analogous art.

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREG A. BORSETTI whose telephone number is



(571)270-3885. The examiner can normally be reached on Monday - Thursday (8am - 5pm Eastern Time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RICHEMOND DORVIL can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Greg A. Borsetti/  
Examiner, Art Unit 2626

/Talivaldis Ivars Smits/  
Primary Examiner, Art Unit 2626

6/1/2009